



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

TIDEWATER REGIONAL OFFICE

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STATEMENT OF LEGAL AND FACTUAL BASIS

Hampton Roads Sanitation District – Virginia Initiative WWTP
4201 Powhatan Road, Norfolk, Virginia
Permit No. TRO-60350

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Hampton Roads Sanitation District – Virginia Initiative WWTP has applied for a Title V Operating Permit for its 4201 Powhatan Road, Norfolk, Virginia facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Permit Writer/Contact:

Laura D. Corl
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Date: **December 21, 2015**

Regional Air Permits
Manager:

Date: **December 21, 2015**

Regional Director:

Maria R. Nold

Date: **December 21, 2015**

I. FACILITY INFORMATION

Permittee

Hampton Roads Sanitation District
PO Box 5911
Virginia Beach, Virginia 23471

Responsible Official

Mr. Edward G. Henifin, P.E.
General Manager

Facility

Virginia Initiative WWTP
4201 Powhatan Road
Norfolk, Virginia 23508

Contact Person

Mr. Mark Feltner
Environmental Scientist
757-460-4254

County-Plant Identification Number: 51-710-00197

SOURCE DESCRIPTION

NAICS Code: 221320 – Sewage Treatment Facilities

NAICS Code: 562219 – Non-Hazardous Waste Treatment and Disposal

NAICS Code: 562213 – Solid Waste Combustors or Incinerators, Nonhazardous

The Hampton Roads Sanitation District (HRSD) is a political subdivision of the Commonwealth of Virginia and was established as a governmental instrument to provide for the public health and welfare by abating water pollution in the Hampton Roads area through the interception of wastewater outfalls and providing wastewater treatment plants. All of the HRSD treatment plants are interconnected for diverting wastewater flow to alternate treatment locations as the area's daily amount of generated wastewater flow varies along with the operational capabilities of each plant. The Virginia Initiative WWTP provides both primary and secondary municipal wastewater treatment for the Hampton Roads area, serving mainly Norfolk clients. The Virginia Initiative WWTP is rated to treat a design maximum average dry weather flow rate of 40 million gallon per day (mgd). The facility process units are grouped into four main functions: liquids management, solids handling, sludge incineration, and electrical generators.

Liquids management--Liquids management consists of all of the unit processes that treat the received wastewater prior to discharge to the Elizabeth River. These unit processes include the septic tank truck unloading station, headworks (influent screening and pumping)/grit removal chamber, aerobic, anaerobic, anoxic reactors, primary and secondary clarification, and disinfection contact basins. (2 basins, exist tank and new contact channel).

Solids handling--Solids Handling consist of unit processes that treat liquid treatment by-product streams before disposal. These streams consist of primary solids from Primary Solids day tank, primary scum concentrators, waste activated solids and sidestream solids from a local waste treatment facility. The solids are processed through pumps to a dewatering centrifuge then screws route dry solids to a belt that conveys solids to incinerator.

Sludge incineration--Sludge incinerator units are comprised of two identical multi-hearth incinerators used to dispose of dewatered solids from the solids handling sections. Each incinerator has 10 hearths, a dedicated induced-draft fan, and air pollution control equipment for particulate matter consisting of a pre-cooler, venturi scrubber, and an impingement (tray) scrubber. The incinerators can fire either natural gas or distillate oil as supplemental fuel in the combustion process.

Electrical generators--Three diesel engine electrical generator sets firing distillate oil. The electrical generators are used mainly for occurrences of normal power lost, but can also, upon request, be used for emergency demand response requirements.

The facility is a Title V major source of SO₂, CO, and NO_x. This source is located in an attainment area for all pollutants. The facility is currently permitted under Minor NSR Permits issued on 02/13/1973 and 03/17/2014.

II. COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

III. EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Incinerators							
I-1/I-2	2	Multi hearth sludge incinerators (natural gas or distillate oil as backup), 1973	21 burners rated at 2.7 MMBTU/hr each per incinerator. 45 dry tons/day (sludge) per incinerator.	Pre-cooler with Venturi scrubber followed by impingement (tray) scrubber (water only). ARCO Products Model No. VS-37-JS-2070, 1973. (Venturi replacement – TurboSonic, 2010.)	ISBR-1/ ISBR-2	PM/PM-10 (Odor)	02/13/73 (State Only)
Liquids Management							
L-1	3a 3b	Liquids Management, 1943 Preliminary Treatment Facility, 2015	40 mgd (dry) (wastewater)	Two stage packed tower scrubber (water plus NaOCl & NaOH). Ershings, 1990. Two stage system, 8300 cfm (biological tower followed by NaOH & NaOCl scrubber). BioWay & Daniel Co., 2008.	LSBR-1/ LSBR-2	(Odor – H ₂ S)	N/A (State Only)
Solids Handling							
S-1	4a 4b	Solids Handling, 1976	40 mgd (dry)	Two stage packed tower scrubber (water plus NaOCl and NaOH) Ershings 1990.	N/A	(Odor – H ₂ S)	N/A (State Only)
Plant Electrical Generators							
G-1 G-2 G-3	1	Three (3) diesel-fired generators (Cummins – QSK78 Series Engines, Model DQLE, manufactured 2014.)	2,500 kW Each	N/A	N/A	N/A	03/17/2014
Gasoline Dispensing							
T-42	-	Gasoline UST	1,000 gallons	N/A	N/A	N/A	N/A

*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

IV. CHANGES TO PERMIT

This action is a minor amendment to the Title V permit issued on November 5, 2015. During the comment period, EPA asked several questions and requested a response from the DEQ, but due to the facility not having an application shield, the comments could not be addressed in time to get the permit issued before the expiration of the previous permit. EPA allowed DEQ to issue the permit as noticed and address their comments in an amendment to the permit. This action is a re-opening to address the EPA comments on the permit issued November 5, 2015.

V. COMMENTS RECEIVED AND RESPONSES

A. Initial comments received from EPA dated November 3, 2015

General:

1. On page 2 of the Statement of Basis, the statement is made that “all of the HRSD treatment plants are interconnected for diverting wastewater flow to alternative treatment locations as the area’s daily amount of general wastewater flow varies along with the operational capabilities of each plant.” This facility seems to be classified as a minor source of Hazardous Air Pollutants (HAPs). Please confirm that even with the potential to obtain flows diverted from other catchments, the facility will remain a minor source of HAPs.

Permit:

2. NSPS Subpart M: Please be more specific in the permit as to what the facility must do to comply with NSPS Subpart M/ 9 VAC 5 Chapter 40 Article 55 (40 CFR §60.5000 through §60.5250). The facility’s requirements may include, but are not limited to:
 - a. Operating parameters:
 - (i) Establishment of operational limits, and continuous compliance demonstration of operating limits (detailed in §60.5190, §60.5210)
 - or-
 - (ii) Requirements for a continuous emissions monitoring system
 - b. Monitoring:
 - (iii) Feed rate and moisture content of sewage sludge feed to the sewage sludge incinerator. (§60.5170(f))
 - (iv) Combustion chamber temperature, fugitive emissions from ash handling, pressure drop across wet scrubber, scrubber liquid flow rate, scrubber liquid pH. (NSPS M, Table 4)
 - c. Initial compliance requirements (§60.5185)
3. Permit conditions 50.h and 40.b: Both of these conditions pertain to emergency use of the generator during ISO-related emergencies. Please confirm that these two permit conditions do not contradict each other.

B. Response from DEQ on November 6, 2015

1. While it is true that the facilities are interconnected, each facility has been evaluated based on its individual maximum design capacity. In other words, no flows can be re-directed to any of the facilities in excess of their individual design capacities. In the case of HRSD-VIP, its design capacity is rated to treat a design maximum average dry weather flow rate of 40 million gallons per day.
2. NSPS Subpart M – specific emission limitations are outlined in Conditions 1 and 2. As the facility has opted out of a continuous emissions monitoring system, ongoing monitoring requirements have been established as part of CAM which establishes scrubber indicators of compliance including scrubber liquid flow rate. Conditions 3 and 20 have been updated to reflect the following language:
 - a. **Condition 3 - Incinerator Requirements - (I-1 and I-2) - Limitations - Operating Requirements - 9 VAC 5 Chapter 40, Article 55** - The permittee shall meet, as applicable, the operating limits and requirements specified in 40 CFR 60.5170 and 40 CFR 60.5175. The permittee shall establish and meet operating limits and requirements for each wet scrubber. The operating parameters used to establish such limits shall include pressure drop across each wet scrubber, scrubber liquid flow rate, and scrubber liquid pH as outlined in Table 4 of 40 CFR 60 Subpart M. Compliance shall be demonstrated as specified in 40 CFR 60.5185, 40 CFR 60.5190, 40 CFR 60.5195, 40 CFR 60.5200, 40 CFR 60.5205, 40 CFR 60.5210, and 40 CFR 60.5215.
(9 VAC 5-80-110 and 9 VAC 5-40-8290B)
 - b. **Condition 20 - Incinerator Requirements – (I-1 and I-2) - Monitoring - 9 VAC 5 Chapter 40, Article 55** – The permittee shall conduct, as applicable, the monitoring requirements specified by 9 VAC 5-40-8310 and 40 CFR 60.5220 and 60.5225. The permittee shall monitor the feed rate and moisture content of the sewage sludge fed to the sewage sludge incinerator as specified in 40 CFR 60.5170(f). The permittee shall continuously monitor the sewage sludge feed rate and calculate a daily average for all hours of operation during each 24-hour period. Keep a record of the daily average feed rate, as specified in §60.5230(f)(3)(ii). The permittee shall take at least one grab sample per day of the sewage sludge fed to the sewage sludge incinerator. If you take more than one grab sample in a day, calculate the daily average for the grab samples. Keep a record of the daily average moisture content, as specified in §60.5230(f)(3)(ii).
(9 VAC 5-80-110 and 9 VAC 5-40-8310)
3. Conditions 50.h. and 40.b. do not conflict as both refer to ISO-declared emergencies. In 50.h., there are no limits on annual hours of operation for the generators in order for them to continue to be considered “emergency” under Subpart III provided their use is limited to bona fide emergencies (of which ISO-declared emergencies are considered by definition). Further, Virginia’s definition of emergency also considers ISO-declared emergencies to be de facto emergency situations.

C. EPA Response Dated November 17, 2015 to DEQ Comments

1. I understand that this plant has a maximum flow. My question has more to do with the composition of this influent rather than the quantity. If there is a change in locations from which the flow is coming, how is it ensured that the HAP concentration and therefore plant emissions of this redirected flow will not approach the major source threshold?

2. Have the ranges for the operating parameters been established? If so, please include these operating ranges in the permit. Additionally, please ensure all required monitoring parameters are included in the permit. For instance, combustion chamber temperature of the incinerator is required per NSPS MMMM, Table 4, but does not appear to be included in the response.
3. Ok, thank you.

D. DEQ Response to Comments Dated December 17, 2015

1. Each HRSD plant meets the definition of a non-industrial Publicly Owned Treatment Works (POTW) as defined in MACT VVV. Their waste stream consists of 85% or greater from residential areas and each plant is rated at less than 50 million gallons per day. In 2000, HRSD hired CH2M Hill to do BASTE (Bay Area Sewage Treatment Emissions) modeling (to estimate emissions of VOCs) of the HAPs at each of the HRSD treatment facilities. This modeling demonstrated that each of the facilities were minor for HAPs. Since that time, the service area and industries in the area have not significantly changed. Annual testing of HAPs is done at each plant. For each renewal application, the highest value measured of each HAP from the last 5 years of available data is used to calculate the worst case actual and potential emissions of each HAP. HRSD has not had any HAP concentrations high enough to trigger major HAP status for an individual plant or via any flow diversions since the sampling began. Flow diversions that typically take place are in the 2-4 million gallons per day (MGD) range.
2. No ranges for the parameters have been established for this facility. We have added all the parameters that this facility will need to monitor by adding a table to this condition with the 40 CFR 60 Subpart MMMM Table 4 requirements.

VI. CHANGES TO THE PERMIT

1. **Condition 3** has been changed to add the requirements of 40 CFR 60 Subpart MMMM, Table 4.
2. **Condition 20** has been changed to add the monitoring requirements described in the DEQ November 6, 2015 response.